



# **USING FINANCIAL DERIVATIVES TO HEDGE AGAINST CURRENCY RISK**

***BRITISH LARGE AND MEDIUM-SIZE FIRMS***

**MY NGUYEN**

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| Author:   | My Nguyen   |
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| Supervisor (Arcada):  | Andreas Stenius   |
| Commissioned by:  |   |
| <p>Abstract:</p> <p>Nowadays, as a growing number of firms strive to conduct their business at international market place, currency risk has increasingly raised concern among financial managers due to its substantial impact on companies' financial results. Financial derivative instruments (Forward, Futures, Options, Swaps) are utilized as efficient hedging mechanisms against such an exchange rate exposure. The main objective of this study is to examine whether derivatives play a primary role in mitigating an adverse movement in currency in multinational firm. The research is carried out in British large and medium- sized companies. The empirical research was conducted on the basis of qualitative method. The findings reveal that the downward effect of currency risk is identified and evaluated in a majority of multinational companies. Although other hedging techniques such as netting, borrowings or natural hedge are at times employed, financial derivative instruments are crucial to hedge against currency risk in multinational companies. In general, forwards is designated as the most favorable type of derivatives to minimize exchange rate fluctuation, followed by swaps. Furthermore, hedging strategy is implemented in accordance with individual firm's policy.</p> |   |
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## **FOREWORD**

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# **1 INTRODUCTION**

## **1.1 Motivation for choice of research topic**

The era of globalization has over the past several decades brought numerous opportunities to organizations to extend their operation business and trading activities beyond the domestic area. This has led to the existence of a paradox: Conducting a cross-border business apparently provides a huge amount of beneficial profit; however it also introduces a wide range of risks. Companies engaging in international trade transactions are likely to possess asset and liabilities denominated in variety of foreign currencies. In this sense, the invoiced price is exactly what is paid or received, regardless of what will happen in the currency market between the date of sale and the date of payment. Meanwhile, the global monetary system is currently characterized by a mix of floating, highly irregular and managed exchange rate policies launched by each nation at its own best interest. Any depreciation of a currency relative value will cause imports decline or exports increase, vice versa. It can therefore come as no surprise that the uncertain movement of these currencies has taken a dramatic toll on the firm's profitability and value. Hence, in the face of today's volatile financial market, the need for effective instruments to minimize that kind of exposure becomes the primary concern for company's survival. The large number and variety of sophisticated managing techniques have increased at a rapid pace as the fluctuation of the monetary marketplace. Although, derivatives have been utilized to the fullest in some giant companies to reduce significantly currency risks, these instruments are still new and



unexploited for some medium companies. That's why derivatives are chosen in this research to analyze their usage and profit.

Sterling Pound is strong currency and mainly circulated inside United Kingdom. However, United Kingdom is a relatively globalised country and has the seventh-largest national economy in the world measured by Gross Domestic Product and nominal Purchasing Power Parity. Apparently, a majority of British companies operate their business outside the domestic area. Hence, they obviously face with the high possibility of dealing with currency risks. In addition, as a matter of fact that London is known as the biggest foreign exchange market in the world, and accounts for more than 30 percent of world foreign exchange dealings. More importantly, the author had an opportunity to study one year exchange program me in London, United Kingdom. So, she wished to take advantage of the exchange period to collect data and to gain hands-on experiences into international business.

## **1.2 Objective**

The primary purpose of this thesis is to examine the importance of financial derivative instruments (forwards, futures, options, swaps) in hedging against currency risk in the large and medium-sized companies which are head-quartered in United Kingdom.

### **1.3 Research questions**

- 1.3.1 Has the firm identified and analyzed all transactions that expose it to currency risk?**
- 1.3.2 Does the firm currently consider the use of derivative to manage currency risk?**
- 1.3.3 What is the most commonly used derivative instruments when managing foreign currency risk? . And Why?**
- 1.3.4 Do the managing strategies vary between companies of different sizes? What the primary factors determine the decision to manage foreign currency?**

### **1.4 Description of method**

The research relies mainly on secondary data. However, it still offers thorough and accurate answers to all the research questions. The qualitative research methodologies would be applied. The reasons why this research method is utilized will be explained later in the research method and approach section.

### **1.5 Limitation**

With regards to the limited availability of information in secondary data, because of the importance of keeping financial management strategies in secret, a number of selected firms normally tend to publish merely the name of their technical tools employed to manage currency risk and try not to release the reasons of their instrument selection and hedging practice.

The author did strive to gather primary data from some companies but unfortunately her effort, at some part, failed. Since all of the contacted companies suits to the requirement of data collection and are well-established companies, the top financial managers are busy all the time and they neither accept appointment arrangement nor respond to her email offer .Due to the personal reasons, the author was placed under to time pressure to carry out her research .Consequently, the mere source of data in this study comes from secondary data , specifically consolidated financial statements.

## **2 LITERATURE REVIEW**

This section is divided into 4 parts.

The first part defines currency risk, and then classifies 3 different types of exposures that may confront firms of oversea business activities. An adverse impact imposed on firms' performance is well- presented.

The second part introduces hedging technique and examines the reason why the corporations should implement it to minimize foreign currency exposures.

The third part is devoted to the understanding and valuing of four types of financial derivatives (forwards, futures, options and swaps) as currency risk hedging tool. A close attention is paid to the benefit and drawback of each tool.

The final part covers primary factors influencing on the currency risk hedging decision.

## **2.1 Foreign-exchange risk**

Foreign-exchange risk, so-called currency risk, is a form of financial risk that stems from the potential movement in the price of one currency with respect to another. (Babbel, 1997, p 642)

Corporations which conduct business in many currencies are likely faced with currency risk. This is because when their payments, investments or borrowings are denominated in foreign currency, any small variation in the exchange rate will adversely impact on the actual value or financial plan of corporation and cost their business a massive amount of capital if not managed effectively. This management failure is inclined to cause a vast loss for corporation's in particular financial period, and to some extent leading to all sorts of financial distress. (Buckley, 1997, p 169)

### **2.1.1 The existing classifications of foreign-exchange risk**

The firms which operate in international marketplace are exposed to changes in foreign exchange rates. These risks are of three types: Transaction exposure, translation exposure and economic exposure.

#### ***2.1.1.a Transaction exposure***

Transaction exposure, the most obvious and common type of currency risk, is concerned with the potential effect on anticipated flows created by the fluctuations in the exchange rates between one's home currency and the currency in which the transaction is denominated. (Buckley, 1997, p 136) In other words, company is subjected to this type of exposure when it has entered contracts to perform specific obligations to pay in foreign exchange or to own the rights to receive in foreign currency, and the payables or receivables are settled at a future date. As a result of direct link to the firm's value, currency transaction exposure, from the point of view of financial managers, represents the real culprit and the serious threat to prosperity of business. (Valdez, 2007, p 234)

#### ***2.1.1.b Translation exposure***

Translation exposure relates to the impact of exchange rate changes on converting foreign currency-denominated assets and liabilities into the domestic currency of

accounting with its implication for the profit and loss statement. (Lumby & Jones, 2003, p.616) This issue normally occurs when the multinational corporation translates the consolidated financial statements of all of its foreign subsidiaries into the reporting currency of the parent company. In this sense, translation exposure does not exert the real influence on the current or future cash flows of the firm, and leads no change in the value of property. However, the assets seem to suffer from value loss when translated into pounds, or the profits are deemed to be worth less in pounds when reported in financial statement. (Valdez, 2007, p.235)

#### **2.1.1.c Economic exposure**

Economic exposure refers to the likelihood that the present value of future operating cash flows of a company, expressed in the parent currency, may change due to uncertain movement of exchange rates. (Buckley, 2004, p 143) This type of exposure is also regarded as the risk of loss that a company tends to experience when investing or operating abroad has a profound effect on export earnings, import cost and foreign investments. For example: Price adjustment arising from competitive disadvantage is likely to cause a downward effect on the company's revenue and cost. Devaluation of the home currency shows a favorable sign to companies competing in export market because it enables the prices of domestic product abroad to decline relative to foreign product. (McGuigan & Kretkiw & Moyer , 2006 , p.755 -756 )

## **2.2 Hedging**

### **2.2.1 Description of hedgings**

Hedging refers to any technique designed to reduce or eliminate risks of adverse movement in financial terms. Currency hedging is defined as an attempt to insure companies' business against exchange rate moving in the direction opposite to their positions in the future market by purposefully taking on the offsetting position in the related currency .This means making investment in another negatively correlated instrument in a hope of minimizing risks of the to participants unfavorable shifts in the monetary market. (Hull, 2011, pp 48-50)

### **2.2.2 Corporate objective of hedging**

The first and foremost reason behind the reducing the risk by hedging is to guarantee contractual foreign currency commitment. Aside from financial distress, there still exist a multiple number of risks that are peripheral to the central business of the firm and hamper it from meeting the contractual obligations. And the necessity of hedging is placed more emphasis on if the firm is engaged into any transaction whose sensitivity to fluctuations in foreign exchange rates offsets the sensitivity of its core business to such movements. (Daigler, 1994, p.159-160)

The second ultimate rationale is laid down on improving or maintaining the competitiveness of the firm. This is because company does not exist in isolation; it is likely to face fierce competitions from other local companies in the same industry and from companies located in different countries that produce identical goods for sale in the global marketplace. If its operating expenses incurred are dominated in the depreciating currencies, the company apparently will position itself more favorably compared to its rivals. (Hull, 2011, p. 50)

A further rationale is to ensure a company to obtain the estimated advantage of anticipated transactions. This circumstance is encountered when the process of evaluating foreign business opportunities is underway but the viably numerical results are constantly upset by the volatile monetary market. It might be advantageous for a company to stabilize these volatilities so as not to miss out the potentially profitable chance. (Stephens, 2003, p 47)

Another rationale for hedging the exposure of the firm relates to eliminating translational risk. This fixes or at least protects the home currency value of foreign assets and profits when financial statements of foreign operations from local currency are translated into the accounts of the home company for the purpose of reporting and consolidation. (Stephens, 2003, pp 47-48)

The decision depends heavily on the preferences of the firm's shareholders toward hedging. There are many firms whose shareholders decline to take anything that seemingly poses some kind of currency risk whereas there are other firms whose shareholders have a more broadly view of such things. Therefore, it comes as no

surprise when two companies conducting business in the same field with the same exposure to exchange rate volatility but they conduct completely different policy, purely on account of the dissimilarity in their shareholders' attitude towards such a risk. (Stephens, 2003, p 48)

## **2.3 Derivatives**

A derivative instrument is a contract between two parties which gives the right, and sometimes the obligation, to buy or sell an underlying asset, and specifies conditions (for example: the dates, the price, the quantities and value of underlying variables) in which the payment has to be made between the participants. (Arnold, 2010, p 202)

### **2.3.1 Currency forwards**

#### **2.3.1.a Description**

Currency forward is a non-standardized contract entered by two parties or more with the intention of exchanging one currency for another at a agreed upon rate and at a certain quantity on a specified future date. (Bodie & Kane & Marcus, 1999, pp 690-691)

The rate on which one currency is based to be converted to another currency as the contract is exercised is called the *strike price* (Wilmott, 2000, p 26)

The certain date at which the contract is due to be exercised is called *expiration date*. (Wilmott, 2000, p 26)

The action to perform the obligation to deliver currency under the terms of contract is called *exercise*. (Wilmott, 2000, p 26)

#### **2.3.1.b Benefit**

Forward contracts utilization provides companies dealing with international clients and suppliers a number of benefits.

The first and foremost purpose of engaging in such transaction is to gain the certainty concerning a future outcome. Under the vigorously fluctuating currency market, neither of parties is able to predict accurately what actual exchange rate in the future will be. This forward contract offers them the protection on unfavorable exchange rate

movement, the fluctuation which can lead companies to loss of million pounds from the dramatic decrease in over sale price or from the sudden rise in imported material cost. (Stephens, 2003, p 61)

It's obvious that the elimination of uncertainty allows companies to set accurate budget and stick to the financial plan because the exact value of future transaction are calculated. In other words, it enables them to focus on their business activities to reap the huge profit instead of wasting time, capital and resources on keeping a constant track of fluctuation of exchange rate. (Stephens, 2003, p 64)

All terms of contract such as rate, expiration date and quantity are negotiable, as a result, this can offer flexibility to the holders to tailor the contracts to suit their specific transaction, such as an earlier exercise or extension. (Daigler, 1994, p 11) In some cases, the large companies tend to employ its market power to negotiate the forward market rate at its own interest. (Lumby & Jones, 2003, p 626)

Another advantage relates to lower cost arising from the absence of third party. Because the agreement is possibly arranged by contract owners, they certainly would not be charged the premium fee or commission fee. (Daigler, 1994, p 11) The absence of cash deposit requirement is another merit. Cash is not required to change hands until the underlying asset is delivered. (Daigler, 1994, p 10)

#### **2.3.1.c Drawbacks**

Once the parties entered the forward foreign exchange contract, a binding agreement, they are legally obliged to carry out its side of bargain at the maturity date. Even if the business circumstance changes and then demand for the exchange disappears, the holder who seeks to withdraw from the contract will certainly suffer from the relatively high cost of cancellation. (Stephens, 2003, p 61) In other words, when it comes to the scenario in which, the exchange rate in the market moves against the holder's interest, the firm is not allowed to escape from its contracted position to grab profit from such a profitable movement. (Watson & Head , 2010, p 393)

Another main weakness of forward contract involves its high degree of credit risk arising from two sources. Firstly, there is no initial cost or deposit requirement when undertaking the contracts. Secondly, the gains and losses between two parties are



figured out at the time the contract becomes mature and related currency are delivered at the pre-determined price. Consequently, it is quite an inducement to the party going to suffer from the loss, or to the party which no longer need to trade the contractual currency, to default on the forward contract. (Hutchinson, 1995, p 358).

### **2.3.2 Currency futures**

#### **2.3.2.a Description**

Currency future is a standardized contractual agreement in which two parties promise to exchange one currency for another at a pre-determined rate and at a certain quantity on a specified future date. (Arnold, 2010, p 224)

In general, currency futures is seen as an upgraded version of currency forward and designed to solve the difficulties encountered with currency forward. Different from forward contract, the future contracts which are traded on organized exchanges, offer a number of standardized features regarding from contract size, maturity date, quoting convention (i.e: USD/EUR), position limits (the number of contracts which a party is allowed to buy or sell) and price limit (i.e. the maximum daily price fluctuation ). (Arnold, 2010, p 227) Another prominent difference stems from the delivery price on future contract, which relies primarily on the market demands, and as the result, tends to be determined on an exchange. In addition, contrary to forward contracts in which there is no need of cash deposit, in futures, at the outset of undertaking the contract, traders are required to open a futures account and both payer and seller need to make security deposits (called an **initial margin**), which are aimed at providing the guarantee that the traders will fulfill their obligations in accordance with the contract. (Hutchinson, 1995, p 360) Their positions will be tracked and adjusted on a daily basis to reflect gain or losses so that if the amount in the account drops below a threshold level, called **maintenance margin**, the trader has to top up account after receiving the margin call from his/her broker. An additional amount of cash to bring up the equity to initial margin is called as **variation margin**. (Sharpe & Alexander & Bailey, 1995, pp 659-660)

### 2.3.2.b Type of hedge positions in future and forward contracts

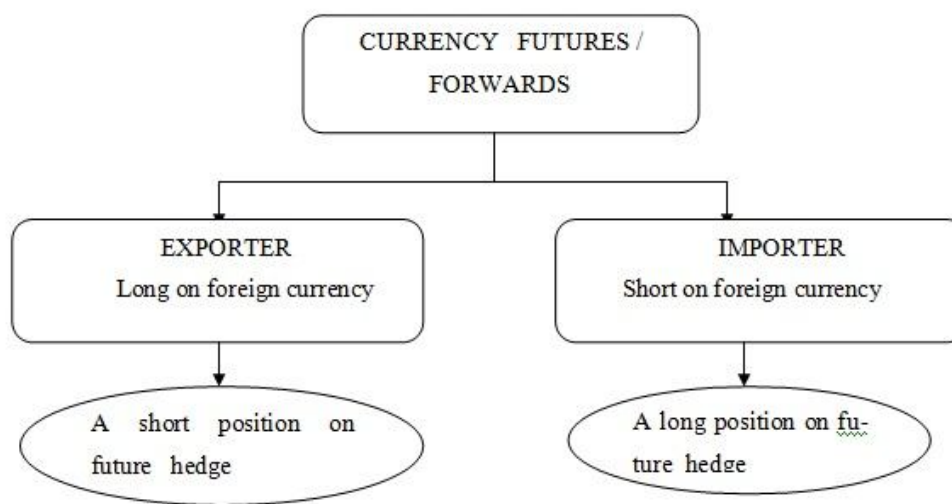


Figure 1. Hedge positions in future or forward contracts

Hedgers are parties at risk with an underlying asset and they decide to take out (buy or sell) derivative instruments to offset their risks. Basically, there are 2 hedge positions.

- Long hedge: The party who commits to purchasing the currency in the future is called to maintain a long position. Because they are currently holding no contractual currency and expect to possess it in the future, they are seen to be short on the cash position. They, therefore, wish to lock in purchase prices and use a long hedge, which reduces the risk of a short position. (Jones, 2002, p 493)
- Short hedge: Another party who commit to selling the currency in the future is called to maintain the long position. Because they are currently holding the contractual currency, they are seen to be long on the cash position and, as a result, need to protect themselves against a decrease in prices. A short hedge mitigate the risk taken in a long position.(Hull, 2011, p 48)

### 2.3.2.c Benefit

In addition to the two first merits offered by forward contracts, the standardized quantity and time to expiration features, combined with organized exchanges enables futures to increase the possibility of matching transactions and to speed up the process of

executing future trading. Since there are a large number of participants on central market, the difficulties in seeking for suitable counterpart are addressed. As the result, this increases significantly the liquidity of market, a characteristic which enhances a very active trading environment. (Daigler, 1994, p 11)

The involvement of organized exchanges, so-called exchange clearing house guarantee, and of daily cash adjustments to account balances, known as margin account, is aimed at ensuring that the default on delivery and payment will not take place. Thanks to engagement of such a party, the relatively unknown players without any long-lasting reputation or good credit standing are given chance to participate in such future market. (Robert, 1995, p 358)

Another important merit which is introduced by a means of exchange-traded contracts player associates with the chance of closing out position. The traders who have already taken on the position in secondary market are able to escape from contractual obligation by substituting another party in their place or by undertaking opposite transaction. Such easy withdraw brings much more convenience to the participants compared with forward contracts. (Hutchinson, 1995, p 358)

#### **2.3.2.d Drawback**

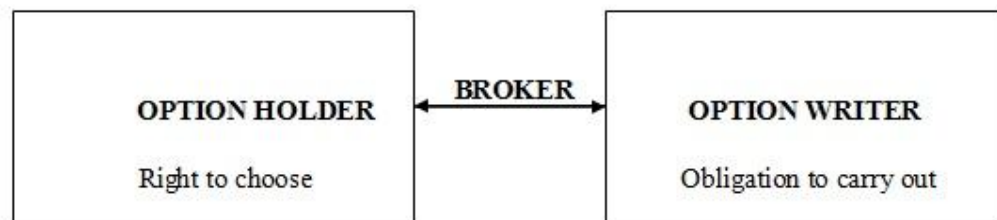
The first shortcoming of prescribed future contracts results from such standardized characteristics as size, expiration date, price and so on, all of which cause traders a low likelihood of obtaining the perfect hedging. As the matter of fact that before future contracts are listed for trading in the secondary market, public exchanges are the only decision-maker on what terms and conditions should be included. This means the contents of documents are not customized to individual need. It's unavoidable that the traders have to take on the transaction in which some required parts are left un-hedged whereas other unnecessary parts are over hedged. Consequently, future contracts often fail to satisfy the needs of the potential small traders. (Daigler, 1994, p 11)

Another drawback is the substantial amount of deposit at the outset and the additional cash which is demanded to inject if margin account falls below the safety level.

### 2.3.3 Currency options

#### 2.3.3.a Description

Currency option is the agreement that confers to the holder the right to purchase or sell currency for a agreed-upon price and at a certain amount of currency at a specified time in the future. But the option holder is not compulsory to exercise the contract. For this right to choose, at the outset, the holder has to pay premium to the broker, a firm or individual who executes orders to buy or sell currency option contracts on the behalf of holder. (Pike & Neale, 2009, p 643)



*Figure 2. Participants in option contract*

There are two parties engaged in the contract. One party grants another one the option to do or not to do something. Option holder, sometimes known as option buyer or option taker, refers to the party who has a right to choose to purchase or sell currency at specified price within a certain period of time. Option writer, sometimes called as option seller or option granter, refers to the party who is obliged to fulfill that choice in accordance with the terms of contractual option.

*Premium* : the upfront cost for which holder is required to pay to gain the possession of option at the outset regardless of whether option will be exercised or not. (Wilmott, 2000, p 26)

#### 2.3.3.b Classification of currency option

According to buying or selling currency, option can be classified into 2 types:

- Call option gives the holder the right to buy a certain quantity of currency at the exercise price at a specified time. (Bodie & Kane & Marcus, 1999, p 618)
- Put option gives the holder the right to sell a certain quantity of currency at the exercise price at a specified time. (Bodie & Kane & Marcus, 1999, p 619)

Based on the terms on exercise in the contract, option can be divided into two types:

- European style options allow the holders to exercise the option only on the expiration date. (Bodie & Kane & Marcus, 1999, p 613)
- American style options allow the holders to exercise the contract at any time up to the expiration date. (Bodie & Kane & Marcus, 1999, p 613)

### **2.3.3.c Benefit**

There are two main reasons why using options to hedge currency exposures is likely to be advantageous.

The first benefit of currency option trading involves the fact that it offers holder not only the protection, when the market shows adverse exchange rate movement, but also the flexibility to benefit when the market show favorable trend. Specifically, once the option takers have officially decided to cover transaction with option, they are given a second chance to reverse the position. For instance, if the currency fluctuates in the direction which favors against the owners' interest, they are allowed to escape its contractual position to take advantage of such movement without shouldering any commitment such as, making any opposite transaction or paying cancellation fee. (Watson & Head, 2010, p 399)

The second merit is that it is advantageous for company which are expecting to engage in foreign currency denominated transactions but are uncertain about its implementation. In other words, for some unpredictable commercial reason, as the need for the exchange disappears, the holder has a legal right to let the option expire without trading or to earn some profit by selling it to another party if it still has any value. (Watson & Head, 2010, p 399) In such withdrawal scenario, the maximum potential loss from which the owner will suffer is limited to the premium paid at the initial stage. (Stephens, 2003, p 145)

#### **2.3.3.d Drawbacks**

Like in future contract, the standardized features in option contract cause traders some difficulties in finding a perfect match in terms of duration and the size of company's exposure. (Watson & Head, 2010, p379)

In general, trading option is regarded as complicated method, and as the result, poses some difficulties to those who lack of advanced financial competency. Furthermore, the indirect cost incurred, including commission and bid, normally charges the holders higher rate per one pound invested. (Stephens, 2003, p142)

In addition, under the same currency, there are a wide range of strike prices and expiration dates available in the market .This means particular options become unfavorable and have to suffer from the low level of liquidity. The lack of liquidity tends to lead to the higher spread, meaning that the traders are likely to pay much more for indirect costs while performing option trade. Moreover, option trading is thought to be time-sensitive in nature because it just valid within a short time .Consequently, the significant proportion of options expire worthless to the holders. (Stephens, 2003, p143)

### **2.3.4 Currency swaps**

#### **2.3.4.a Description**

Cross currency swap is the agreement between two parties to swap both the periodic interest payments and principal denominated in one currency into another currency at the agreed upon rate of exchange for the specific period of time. On the maturity date, each party is required to return the other the swapped principal sum . (Watson & Head, 2010, p 382)

#### **2.3.4.b Benefit**

Swap offer both of participants the chance to obtain funds at lower rate compared with direct borrow from domestic bank. This is because one borrower exchanges the comparative advantage possessed by him with the comparative advantage possessed by the other borrower. Furthermore, absence of upfront premium in swap contract leads to the reduction in transaction cost. (Bodie & Kane & Marcus, 1999, p 736)

Swap can be employed to hedge risk in the relatively long-term period whereas the other types of derivatives are just applied in the short term. (Bodie & Kane & Marcus, 1999, pp 736-737)

Swap enhances corporations' likelihood to find the perfect match between their liabilities and revenues. (Daigler, 1994, p 602)

#### **2.3.4.c Drawback**

The first and foremost drawback relates to the high exposure of default risk and creditworthiness of the swap counterparties. If one party fails to meet the financial obligation upon the maturity date, the counterparty will certainly fall into high trouble of confronting with default on principal payment together with interest, causing the substantial breakage cost. As a result, the companies which are of low credit ratings, are likely to encounter with obstacles in finding swap counterparty. Furthermore, compared to other derivative instruments, swap lacks of liquidity. (Daigler, 1994, pp 602-603)

#### **2.3.4.d The comparisons**

The comparison among derivative financial instruments can be summarized briefly in the following table:

| Types          | Advantages  | Disadvantages  |
|----------------|---|--|
| <b>Forward</b> | <ul style="list-style-type: none"> <li>+ The contract terms are tailored to suit each participant's specific needs, so it offers the perfect match.</li> <li>+ No upfront fee required because of the absence of third party.</li> <li>+ Single future payment</li> </ul> | <ul style="list-style-type: none"> <li>+ Because of the nature of binding agreement, it is difficult or impossible for participants to withdraw to back out to benefit from any favorable movement in the currency market.</li> <li>+ High level of credit risk</li> </ul> |

|               |  |  |
|---------------|--|--|
| <b>Future</b> | <ul style="list-style-type: none"> <li>+ Offers the closing out position.</li> <li>+ Unknown players are given chance to participate.</li> <li>+ Enhances liquidity of market.</li> <li>+ Single future</li> <li>+ Reduces default risk</li> </ul> | <ul style="list-style-type: none"> <li>+ Offers a low possibility of obtaining perfect hedging due to standardized features.</li> <li>+ Needs a huge amount of deposit and additional money, when required to maintain margin account</li> </ul>                                   |
| <b>Option</b> | <ul style="list-style-type: none"> <li>+ Option holders are given chance to close the position</li> <li>+ The maximum loss from which the buyer possibly suffer is limited to premium</li> </ul>   | <ul style="list-style-type: none"> <li>+ The most complicated instrument</li> <li>+ Lack of liquidity causes higher spread</li> <li>+ Short maturity duration</li> <li>+ It's difficult to find the perfect hedging due to standardization</li> <li>+ High upfront cost</li> </ul> |
| <b>Swap</b>   | <ul style="list-style-type: none"> <li>+ Series of payment in the future</li> <li>+ No upfront fee required</li> <li>+ Suits to long-term project</li> </ul>   | <ul style="list-style-type: none"> <li>+ High default risk</li> </ul>  |

*Table 1. Comparison among 4 types of financial derivative instruments*

## 2.4 Hedging currency risk with financial derivatives

### 2.4.1 Main factors affecting the corporate decision to hedge foreign currency risk

In general, there are five primary elements affecting the corporation's hedging decision.

#### **2.4.1.a Policy**

Managerial policy plays a crucial role in determining on whether hedging techniques is utilized or not. If the leading managers are in favor of derivative usage to hedge against currency, derivative instruments are thought to be a helpful tool and used frequently whenever the operating activities are about to denominated in foreign currency. In contrast, in the same industry, under the comparable circumstance, the other firms in



which decision makers showed no interest toward hedging, rarely or even have never been employed hedging proxy. ( Mseddi & Abid 2010 , p .107)

#### **2.4.1.b Leverage**

Another key determinant of the extent of derivative instruments involves the firm's leverage. The levels of leverage are positively correlated to the likelihood of utilizing hedging. The highly-leveraged firms are defined as the firms which are of high credit quality or shoulder a substantial amount of debt. Hence, hedging enables the highly-leveraged firms to reduce the likelihood of falling into financial distress.( Sivakumar & Sarkar , p.10)

#### **2.4.1.c Liquidity**

There is a close relation between liquidity and firm's hedging decision. The firms with cash restraint tend to hedge against currency risk, the opposite trend is true to cash-rich firms. This is because the firms which are of capital shortage are likely to fail to cover its fixed expenses or pay for the debt claim and consequently financial distress occurs. In other words, the high level of cash holdings indicates the firm's low possibility of confronting with financial distress and also insures its stable financial condition, so it's not necessary for cash-rich firms to employ hedging solution.( Nance & Smith & Smithson ,1993,p.269,270,271 ).

#### **2.4.1.d Firm size**

The size of companies has a robust impact on hedging decision .There is no doubt that high expenses associates with the establishment of currency risk managing office to carry out research , to find counterparts, to performs transaction, and the installation of special software and salary of personnel. As the result, the large and medium-sized companies are likely to resort to using hedging, the small firms ,on the other hands, can't afford to such cost.( Sivakumar & Sarkar , p.10)

#### **2.4.1.e Cost of hedging**

Whether the cost of hedging far outweighs benefit of risk reduction also is the crucial determinant on the usage of derivative instrument. Hedging expenses normally comprise of variety of transaction costs such as commission charged by brokerage or service fee by dealers, information searching costs, subscription to Reuter reports and news channels. Before undertaking hedging contracts, the traders place the mentioned

transaction costs into serious considerations and evaluate the difference between the benefit acquired from hedging position and expenses incurred from it.( González & Sandiás & López & Búa , 2006 ,p.27) (Sivakumar & Sarkar , p.10)

### **3 RESEARCH METHODOLOGY**

#### **3.1 Research approach, research method and strategy**

Since the author targeted at drawing the general pattern of derivative usage in British large and medium-sized companies, this study is conducted in inductive approach. Induction's purpose is to move from specific subjects to broader generalizations and theories. (Saunders & Lewis & Thornhill, 2003, p 90)

Its main objective is to investigate the usage of financial derivative instruments in British large and medium-sized firms and to answer the research questions in relevant manners. The research is carried out on the basis of a qualitative method .

Qualitative research is an inquiry method of gaining deep insight into behavior and of interpreting reasons behind the decision making. As its nature, the qualitative method mainly serves for exploratory purposes and aggregating the non-numeric data , as a result, it is utilized to explore the more specified type of research question such as “why” , “how”, and “what”.( Riley &Wood & Clark & Wilkie & Szivas, p. 111 ) .Another important objective of this study is to explain “why this type of derivative instrument contract is undertaken more frequently than the others” and “ what determinants behind the choice of derivatives” . As a result, qualitative research is a good option in this study.

#### **3.2 Designing the sample**

Sampling technique refers to the methods which the researcher employs to select the appropriate or representative sample to reduce the number of data required to be collected. In general, there are two types of sampling: probability and non-probability. (Riley & Wood & Clark & Wilkie & Szivas, 2000, p 75)

Probability sampling is defined as the sampling techniques where every individual in the population is given an equal chance of being chosen. One prominent merit of this method is to eliminate systematic and sample bias. On the other hands, in non-probability sampling, the probability of being selected is not equal for every individual. (Riley *et. al*, 2000, pp 76-77) As a result, this method is taken as a good option for the research. As one of the main objectives of the research is to explore if the derivative financial instruments are utilized to hedge against currency risk and to identify which type of derivatives is more frequently employed, generalization for research is highly demanded. Therefore, non-probability sample provides a best fit to objective of research. The non-probability sample chosen is the companies which satisfy the following criteria:

- The companies are headquartered in United Kingdom and conduct activates in a large number of countries.
- The companies are listed on the London Stock exchange.
- The first 25 companies are classified among a group of large market capitalization companies ranking from 1st to 350 largest listed companies on the London Stock Exchange main market. The remaining belongs to a group of small market capitalization companies ranking from 351st to the 619th largest listed companies on the London Stock Exchange main market. The former list is considered British large-sized companies whereas the later is categorized as British medium sized companies.
- A wide range of industries is ensured.
- Their annual financial reports 2011 have been released ( Preferred)

### **3.3 Reliability, validity and generalization**

#### **3.3.1 Reliability**

Reliability is defined as the extend to which the similar conclusion can be reached if the research is carried out by another author. (Kumar, 2008, p 51) It is possible to obtain quantitative and qualitative reliability in this case because all data gathered

come from financial statements, which are placed under a strict supervision of government and auditing agency.

### **3.3.2 Validity**

Validity refers to the extent to which a study accurately measures what the researcher sets out to measure. As a result, validity is taken as a primary criteria for assessing quantitative and qualitative. (Rile *et. al*, 2000, p 19) In this research, the chosen samples are not random but actually provides a best suits to the objective of study as described above. Since the author wished to ascertain the derivatives usage to minimize exchange rate risk in British large and medium-sized companies, she selected the sampling group on the basis of relevant criterion and evaluated some currency risk related details in the financial reports, such specific information is extremely valid to the research.

### **3.3.3 Generalizability**

Generalization refers to the extent to which the general conclusion is drawn from the specific and much smaller samples. (Riley *et. al*, 2000, p 21) The data in this research can represent for the general case because it is collected from companies which operate business in a wide range of industries, vary with sizes and satisfy to objective of research.

## **3.4 Data Collection**

Secondary data is the data which is collected, collated and analyzed by someone other than user as opposed to primary data which is collected directly by researcher. ((Riley & Wood & Clark & Wilkie & Szivas, 2000, p 107)

The research method exploited in this study is merely based on secondary data that has been collected from the analysis of annual financial reports of 50 United Kingdom based companies. The prominent advantages of this method are to provide larger database and to guarantee the high level of reliability and accuracy, the first and foremost criteria in finance research. All of the selected companies which are named on London Stock Exchange, whose annual report are required strictly to be in compliance

with ethical rules and to meet professional financial standards. More noticeably, the government or international auditing agency already carried out a large-scale survey or census on the financial statements after their disclosures. Another merit involves far less time consuming and cheaper cost in searching secondary sources than in conducting primary data collection.

Below there is a summarized data collected from 50 selected companies' financial statements.

Noted:

Trans: Transaction exposure

For: Forward contract

Transl: translation exposure

S: Swap contract

Eco: economic exposure

F: Future contract

No: none of exposure hedge

O: Option

|   | <i>Large -sized<br/>companies</i> | <i>exposure<br/>hedged</i> | <i>derivatives</i> |    | <i>Medium-sized<br/>companies</i> | <i>exposure<br/>hedged</i> | <i>derivatives</i> |
|---|-----------------------------------|----------------------------|--------------------|----|-----------------------------------|----------------------------|--------------------|
| 1 | <b>AMEC</b>                       | Trans                      | For, S             | 26 | <b>Colt Telecom<br/>Group plc</b> | Trans, Eco                 | For                |
| 2 | <b>ARM HLDGS</b>                  | Trans                      | For, O             | 27 | <b>Camellia</b>                   | NO                         |                    |
| 3 | <b>Ashmore</b>                    | Trans                      | For , O            | 28 | <b>Chesnara</b>                   | Trans                      | For                |
| 4 | <b>Aviva</b>                      | Trans ,<br>Transl          | For, S             | 29 | <b>Costain</b>                    | Trans                      | For                |
| 5 | <b>BT Group plc</b>               | Trans                      | For , S            | 30 | <b>Dialight</b>                   | Trans                      | For                |
| 6 | <b>Burberry</b>                   | Trans                      | For , S            | 31 | <b>Fidel Plc</b>                  | Trans                      | For                |
| 7 | <b>Capita PLC</b>                 | Trans                      | For , S            | 32 | <b>Mothercareplc</b>              | Trans                      | For                |
| 8 | <b>Centrica</b>                   | Trans ,<br>Transl          | For , S            | 33 | <b>Sepura plc</b>                 | Trans                      | For                |

|    |                                    |                   |         |    |                                  |                   |            |
|----|------------------------------------|-------------------|---------|----|----------------------------------|-------------------|------------|
| 9  | <b>Compass Group</b>               | Trans ,<br>Transl | For , S | 34 | <b>Primary health properties</b> | Trans             | For , O    |
| 10 | <b>CRH</b>                         | Trans             | For, S  | 35 | <b>Pvcrystalox</b>               | Trans,<br>Transl  | For        |
| 11 | <b>Diageo</b>                      | Trans ,<br>Transl | For , S | 36 | <b>Renold</b>                    | Trans,<br>Transl  | For        |
| 12 | <b>Experian plc</b>                | Trans             | For , S | 37 | <b>RM plc</b>                    | Trans             | For        |
| 13 | <b>G4S</b>                         | NO                | NO      | 38 | <b>Ricardo</b>                   | Trans             | For, S     |
| 14 | <b>GSK</b>                         | Trans             | For , S | 39 | <b>Severfield-Rowen</b>          | Trans             | For        |
| 15 | <b>Hammerson</b>                   | Trans             | S       | 40 | <b>Smiths News plc</b>           | NO                |            |
| 16 | <b>IMI PLC</b>                     | Trans ,<br>Transl | For , O | 41 | <b>Speedyhire</b>                | NO                |            |
| 17 | <b>Mark&amp;Spencer</b>            | Transl            | For     | 42 | <b>Sepura plc</b>                | Trans             | For        |
| 18 | <b>Meggitt PLC</b>                 | Trans ,<br>Transl | For     | 43 | <b>Tedbaker</b>                  | Trans ,<br>Eco    | For        |
| 19 | <b>Segro</b>                       | Transl            | For , O | 44 | <b>Thomas Cook Group</b>         | Trans,<br>Transl  | For, S , O |
| 20 | <b>Morgan Crucible</b>             | Trans             | For     | 45 | <b>Torotrak</b>                  | NO                |            |
| 21 | <b>Mitchells &amp; Butlers plc</b> | Trans             | S       | 46 | <b>VP Plc</b>                    | Trans ,<br>Transl | For , S    |
| 22 | <b>Ophir Energy plc</b>            | NO                |         | 47 | <b>Vectura group</b>             | NO                |            |
| 23 | <b>Oxford Instruments plc</b>      | Trans             | For , O | 48 | <b>Yell Group</b>                | Trans             | For        |
| 24 | <b>Northgate plc</b>               | Transl            | S       | 49 | <b>Wincanton</b>                 | Transl            | For , S    |

|    |               |    |  |    |      |       |     |
|----|---------------|----|--|----|------|-------|-----|
| 25 | Stobart group | NO |  | 50 | Xaar | Trans | For |
|----|---------------|----|--|----|------|-------|-----|

Table 2 . Summarized data collected from 50 selected companies' consolidated financial statement.

## 4 EMPIRICAL RESEARCH

### 4.1 Has the firm identified and analyzed all transactions that expose it to currency risk?

The findings from financial statements reveals that all of selected companies are exposed to the fluctuations in exchange rate for both non-sterling denominated transactions and the translation of net assets and income statements of oversea subsidiaries. The transaction risk tends to arise from a number of sources such as foreign currency invoiced receipt from the purchase of raw material, the operation of its foreign subsidiaries or its manufacturing factory, international sales or services and so on. On the other hands, translation risk is likely to stem from conversion of the oversea subsidiary companies' operating results, assets and liabilities presented non-sterling into sterling. In general, currency risk is classified in the comparable way in all the study companies and each type is identified similarly to what were described in the section 2.1.1. The explanation can be that all of the selected firms are listed on London-stock exchange, so their financial reports have to comply strictly with accounting standard.

### 4.2 Does the firm currently consider the use of derivative to manage currency risk?

However, although all of the studied companies are, according to 50 consolidated financial statements, confronting at transaction risk and translation risk and recognized their adverse effect, not all of them opt to take out derivatives to offset the downward movement in related currency. According to collected data (*table 2*) , 42 companies, accounting for 84 %, disclosed to enter into derivate instrument contracts to hedge against exchange rate exposure in the selected year 2011 or 2010, whereas 8 companies,

presenting 16%, disclosed that they did not or provided no mention about derivatives usage.

For the purpose of drawing an accurate picture on derivative financial instrument's practices, the further researches are carried out into the 8 non-derivatives users to figure out if these instruments were employed to hedge an adverse fluctuation of exchange rate in the previous years. The consolidated financial statement of these firms in the previous years (2010 and 2009) are analyzed and recorded. The results are illustrated in the following table:

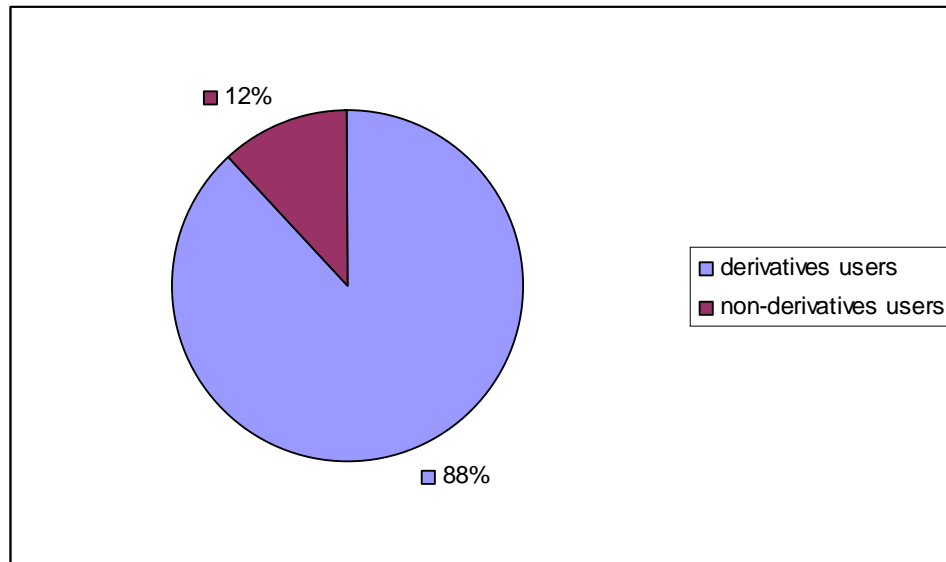
|   | Companies               | Types of currency exposure hedged | Specific purpose  | Type of derivative financial instrument | Currencies       |
|---|-------------------------|-----------------------------------|---|---|------------------|
| 1 | <b>Camellia</b>         | NO                                |   |   |                  |
| 2 | <b>G4S</b>              | Transaction                       | purchase ,sale US-issued note                                 | Forward , Cross currency swap           | US dollar , Euro |
| 3 | <b>Ophir Energy plc</b> | NO                                |   |   |                  |
| 4 | <b>Stobart Group</b>    | NO                                |   |   |                  |
| 5 | <b>Smiths News plc</b>  | Transaction                       | lower the total cost of borrowings on an after tax cash basis | Currency swap                           | US dollar        |
| 6 | <b>Speedyhire</b>       | NO                                |   |   |                  |
| 7 | <b>Torotrak</b>         | NO                                |   |   |                  |
| 8 | <b>Vecture</b>          | NO                                |   |   |                  |

*Table 3 . Adjusted data in eight non-derivatives users in the previous years*

Combined *table 3* and *table 2*, the number of corporations which shows no favor toward derivative financial instruments decreases to 6, representing 12%, the figure reflecting more precisely on derivatives' practice than previously studied. 4 out of 6 belongs to the group of small market capitalization companies. In addition, 22 out of 25 in both large-

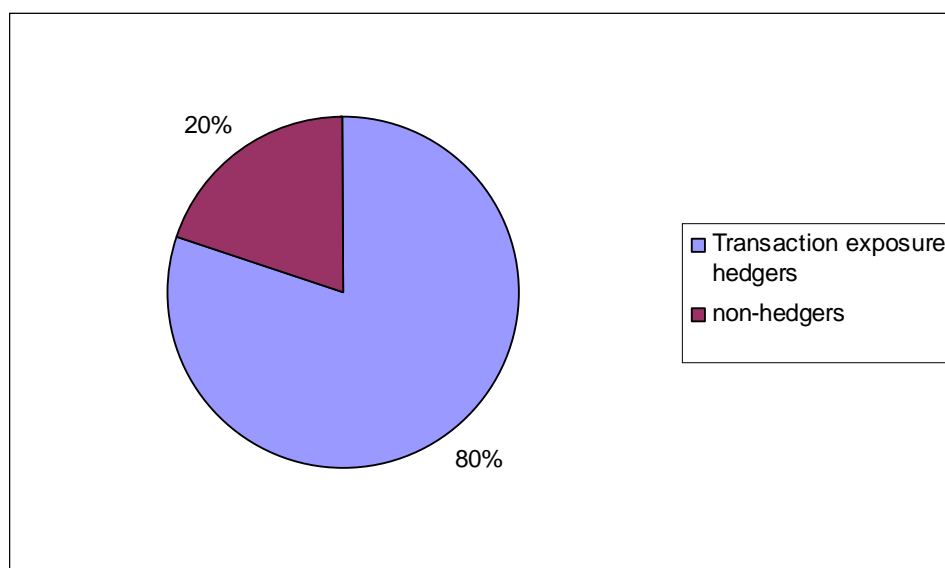


sized firms and medium sized firms, also comprising of 88 % companies in each category, undertook derivatives.



*Figure 3 . Derivative users among 50 selected companies*

However, 20 out of 25 companies, accounting for 80%, in both large-sized companies and medium-sized companies, decided to take out derivatives to mitigate transaction exposure.



*Figure 4 . Percentage of companies using derivatives to hedge against transaction exposure*

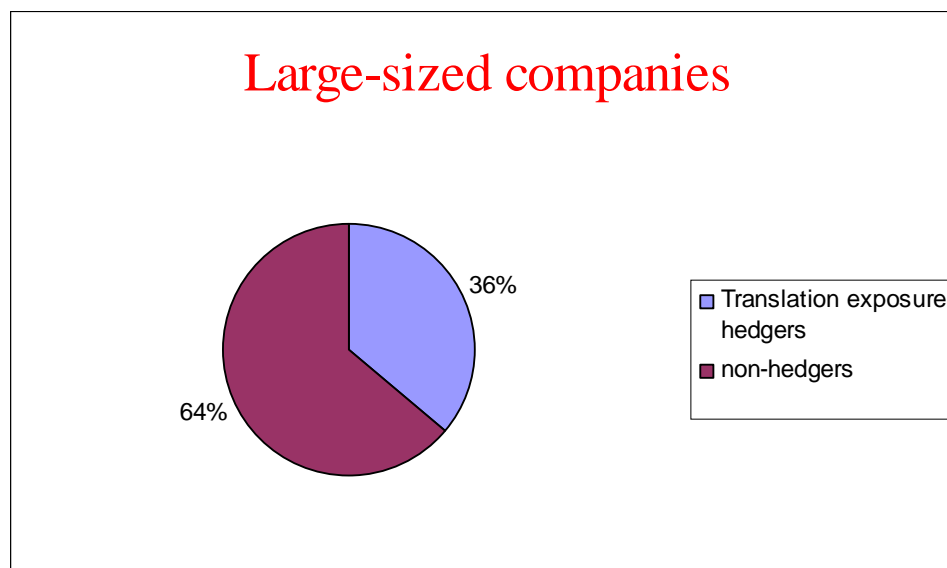
There is totally no difference in transaction risk hedging pattern between large –sized firms and medium-sized firms.

With regards to transaction risk, the choice of non-hedger, in general, might be attributed to the implementation of other hedging techniques. For example, some firms are inclined to hold a majority of fund or of surplus cash in applicable currencies to meet short-term commitments. (Ophir-energy’s financial report, p.21 & Camilla plc’s financial annual report 2011) Another reason behind non-hedger involves in the fact that the financial decision makers, under some circumstances, hold a consistent belief that a highly complicated use of derivatives would not bring back a significant benefit and, as a result, they tend to resort to borrowings or other more simple instruments. In some cases, the financial managers, furthermore, find it unnecessary to authorize the use of certain financial instruments to cover potential movement in currency for the transactional exposed risk is limited or of a low level and given the nature and diversity of its operating activities, the company can minimize the exposure naturally by itself. (CRH’s financial report, p.86) More specifically, the group which carries out activities in countries where the functional currency is other than sterling can reduce the exposure of oversea subsidiaries to transaction risk, when appropriate, by maintaining local

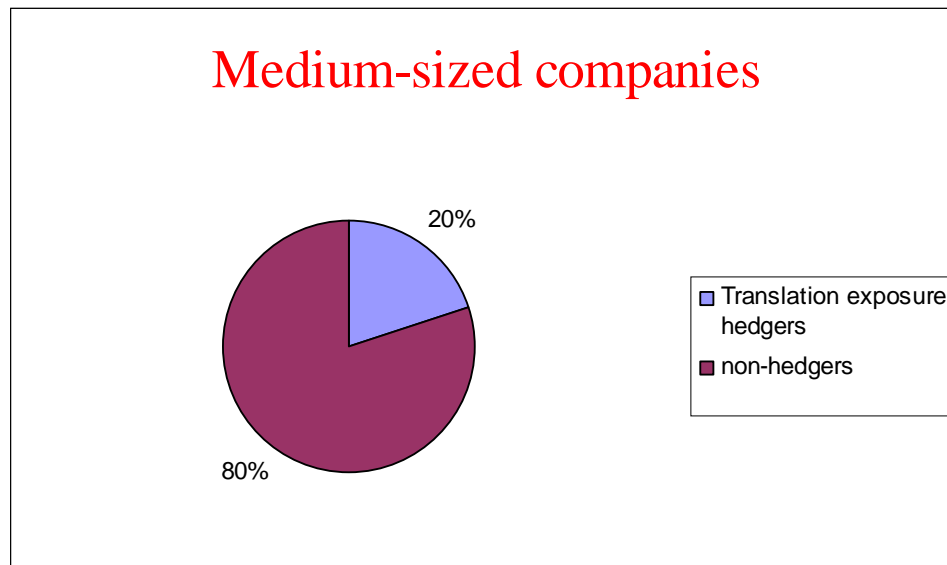
currency of business operation income in the same currencies as its cost base. (Amec's financial report, p.97 & Vectura's financial report, p.53)

As shown from collected data in the *table 2* and *table 3*, a significant proportion of presented companies opted not practice derivative instruments to hedge any foreign exchange translation risk relating to non-sterling-denominated financial liabilities Only 9 out of 25 large-sized companies and 5 out of 25 medium-sized companies conducted hedging instruments to mitigate translational exposure.

Based upon *table 2* and *table 3*, *figure 5* and *figure 6* were put down.



*Figure 5. Percentage of British large-sized companies using derivatives to hedge against translation exposure*



*Figure 6 . Percentage of British medium-sized companies using derivatives to hedge against translation exposure*

According to *figure 5* and *figure 6*, there is a noticeable difference between large-sized companies and medium-sized companies, 36 % and 20 % respectively. This might result from the fact that large-sized companies tend to possess much more foreign currency denominated assets and to make more investment into oversea subsidiaries. Consequently, large firms are more likely to be exposed to translation exposure and without hedging, its material translation effect on parent companies are more serious in large ones than in medium ones. That is a reason why the percentage of translation exposure hedgers in large companies is roughly two times higher than the figure in medium companies.

Below are general reasons behind non-derivative usage in two types of companies:

The first and foremost explanations behind non-translation exposure hedger s' decisions is that they have other hedging mechanisms in place to mitigate such exposure. To be more precise, for the purpose of protecting the sterling value of consolidated financial statement the high proportion of borrowings should be matched with the functional currencies of subsidiary undertakings when the parent company provide financing to or make investment in its oversea subsidiaries' operation .Given other constant

variables, this practice ensures insignificant material influence on the net asset of the whole companies as the value of functional currencies of entities moves against sterling. (Yell's financial report, p.74 & Wincanton's financial report, p.77) .

Otherwise, the firms might ignore the translational risk and just apply the governed accounting policy as follows:

- Concerning about the overseas sales, a proportion of the group's profit is earned in other currencies are translated into Sterling using the average exchange rate prevailing throughout the year or the selected period. Furthermore, transactions invoiced in foreign currency are translated into Sterling at the exchange rate ruling at the date of the transactions. (Amec's financial report, p.97)
- Because the group's consolidated statement is legally required to be presented into Sterling, a parent company's functional currency, each individual entity's financial report with a functional currency different from Sterling is translated into Sterling at monthly average exchange rate and its monetary asset and liability are converted into Sterling at the foreign exchange rate ruling at the balance sheet date (BT plc's financial report, p.193 & Stobart group's financial report, p.55, Pvcrytalox's financial report )

#### **4.3 What is the most commonly used derivative instruments when managing foreign currency transaction? And Why?**

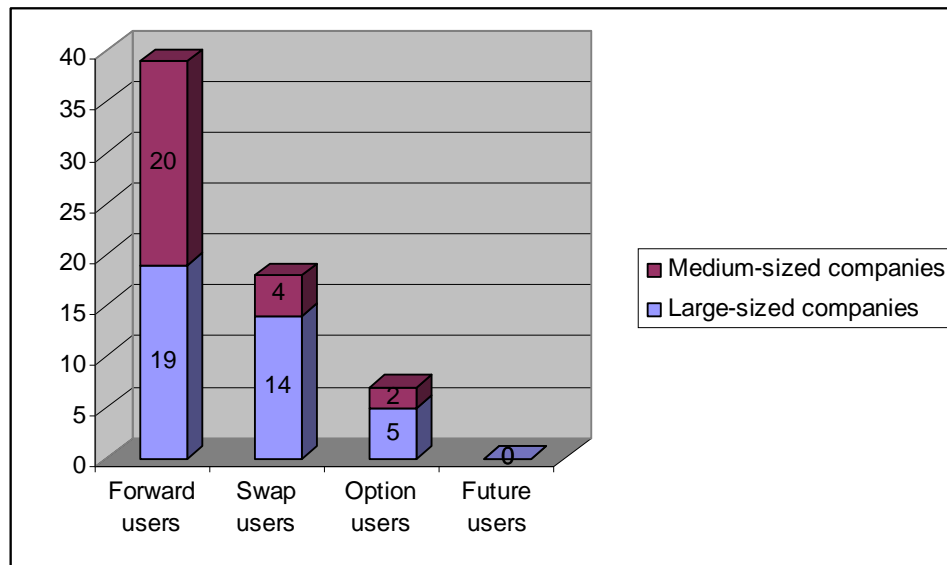


Figure 7 . The number of companies entering into derivatives contracts ( forwards, Swaps, Option, Future )

Based upon *table 2* and *table 3*, *figure 7* was drawn. The findings show that a number of forward users (39 companies in total) are as twice as a number of swap users (18 companies in total). Meanwhile, merely 7 out of 50 selected companies decided to enter into option contracts and none of chosen ones took out future contract. More particular, there is roughly no difference in the tendency of undertaking forward contracts between medium sized and large sized companies. However, when it comes to swap contracts, a remarkable difference appears. Large-sized companies are nearly four times more likely to conduct swap contracts than medium-sized companies are. The identical trend is seen in terms of option user. There are approximately two times as many option users in large-sized companies as those in medium-sized companies. It might be lead to the conclusion that firm size somehow influences the usage of swap and option. This will be discussed in detail at the end of this research question.

As indicated from *figure 7* , forward foreign currency exchange contracts are apparently designated as the most favorable among four types of derivative financial instruments to hedge against the volatility of exchange rate in British large and medium-sized companies. Swap is ranked as the second favorable type of contract.

The exposure to fluctuation in exchange rates on highly probable forecast sales and purchase denominated in a currency other than pound are mainly hedged by forwards and these contracts are renewed on revolving or regular basis with accordance with approved policy. (Tedbaker's financial report, p.71) Besides, forwards are utilized to mitigate currency risks arising from funding subsidiary companies' operation, oversea activities, acquisitions and other forward commitments and are employed to hedge future repayment, such as net investment borrowings, back into the originating currency. With regards to translation risk, forward contracts are deemed to effective hedges against the exposure to currency fluctuations on retranslation of the balance sheets of the subsidiary undertakings whose functional currency is non-sterling.

In some firms, the proportion of forecast foreign currency transactions to be covered by forwards are defined certainly, widely ranging from 60% to 100%. Meanwhile, in other firms, an appropriate percentage tends to be decided on a case-by-case basis with reference to the companies' currency risk hedging policies and prevailing market conditions. (Oxford Instrument's financial report, p.64)

“Forward foreign currency exchange contracts are initially identified at fair value on the date on which the contract is entered into, and are subsequently re-measured to fair value at each reported balance sheet date. The fair value of forward foreign currency exchange contracts is calculated by reference to current forward exchange rates for contracts with similar maturity profiles” . (Spirent's financial report, p.64)

The derivative financial instruments are held or issued not for trading or speculative purposes. (Mothercare plc's financial report, p.53 & Wincanton's financial report, p.56) In contrast, they are merely aimed at matching as accurately as possible companies' principal projected cash flows by currency and with the comparable maturity profile to actual liabilities, assets or transactions in the same currency. (Compass group's financial report, p.26) That's the main reason why forward contracts are highly preferred than options and future, both of which offer closing out position or cancellation possibility. Such a practice of firms undeniably confirms the prominent advantage of forward, mentioned in the section 2.3.1.a. The participants tend to approach to the commercial bank, bring up their demands and provide the detail about their requirement. The negotiable terms about exchange rate, expiration date and quantity

provide best suit to the participants' need and ,making forward far outweigh other types of derivatives .Futhermore, legal obligation of performing the contract is considered one of drawbacks of forward earlier ,now turns out to be its merit and also the main reason why firms decided to undertake this sort of contracts.

As clearly shown from *figure 7*, Swap is ranked as a second position. At issuance of US dollar or Euro denominated notes or bonds, companies are inclined to issue a cross currency interest rate swap to mitigate the foreign currency exposure resulting from the principal amount and fixed interest rate .The aforementioned theory in section 2.3.4b contributes to explaining clearly the application of Swap. As the bond holders requires interest payment at the regular interval and the final principal payment at the maturity date , the features of swap contracts perfectly suits to the requirements of issuer. Futhermore, as identified before , swap are employed frequently to hedge risk in the relatively long-term period whereas the other types of derivatives are just applied in the short term.When bond is well-known as a long-term investment , this distinguishing feature makes swap much more favorable than the others in the context of bond issuance. More noticeably, according to the *figure 7*, large firms are more likely to utilize swap than medium firms.The huge capital and a large number of lucrative investing projects allows large firms to gain more chance to expand futher and raise equity ,consequently they are more likely to issue foreign currency denominated bonds, note and stock than medium firms.

Option serves as the third position with only a modest number of users. The firms show less preference to it because there is a common scenario in which the spot rate at expiry date is unfavorable toward holders; consequently the contracts were left unexercised.The closing out choice to gain profit from favorable movement in the market is theoretically viewed as a merit,however practically turns out to be “unnecessary” to most of derivative users.Just a small proportion of companies opt to option mainly for speculation , and there is no doubt that all of users are uncertain about their future transactions .Futhermore, the empirical results also prove that option trading is relatively time-sensitive and consequently, the significant proportion of options expire worthless to the holders.



More noticeably, the selected companies have no discussion or mention about future contracts in their financial report. The futures are seen as an upgraded version of forwards and, in theory, their standardized feature enhances financial market's liquidity, however, the characteristic, in practice, turns out to be a disadvantage to firms, which seek for derivatives merely because of the need of a perfect match. Because some required parts of future contracts are left un-hedged whereas other unnecessary parts are over hedged, futures causes some inconvenience to the firms. Furthermore, as identified in 2.3.2b, the margin account maintenance adds to its weaknesses. The additional money is required to top-up when the account falls below maintenance margin, making futures less favorable than option.

#### **4.4 What the primary factors determine the decision to manage foreign currency?**

The most important driving force behind the decision to manage foreign currency risk is the firm's approved hedging policy, this factor is also discussed in the section "the factors affecting corporate hedging decision". In all selected companies' financial statements, it is clearly stated that the derivative financial instruments are chosen where appropriate or necessary in accordance with the Group or treasury's management policy, a fundamental requirement. (Mothercare plc's financial report, p20 & Xaar plc's financial report, p44 & Tedbaker's financial report, p.71) The proportion of hedged transaction and the rolling basis on which contracts are renewed and governed within approved rule. Merely because of group's financial policy, in some companies, derivative financial instruments are not in place whereas in other companies, forwards or swaps are utilized so frequently when it comes to foreign currency denominated receipt or revenue or when necessary. (Compass Group's financial report, p.27).

As disclosed from some consolidated financial statements, the hedging policy is set on the foundation of many factors such as size of transaction, counterparty risk and the possibility of finding the perfect match and the likelihood of future commercial transaction.

With regards to the size of transaction, the majority of companies, before undertaking derivatives, performed sensitivity analysis to measure the effect of currency volatility

and also presented the figures in their financial statements. (Spirent's financial report, p106) For instance, they made detailed calculation and thorough analysis on how 10% strengthening or 10% weakening in US dollar or other currencies will cause a specified amount of loss or gain and affect their consolidated financial statements. It can be illustrated clearly in three following figures :

|   |      |           |           |
|---|------|-----------|-----------|
| Percentage change in relevant €/US\$ exchange rate                  |      | +/- 5%    | +/- 2.5%  |
| Impact on profit before tax   | 2011 | -/+ €8m   | -/+ €4m   |
|   | 2010 | -/+ €7m   | -/+ €4m   |
| Impact on total equity*   | 2011 | -/+ €203m | -/+ €104m |
|   | 2010 | -/+ €195m | -/+ €100m |
| * Includes the impact on financial instruments which is as follows: | 2011 | +/- €105m | +/- €54m  |
|   | 2010 | +/- €92m  | +/- €47m  |

*Figure 8 . CRH's sensitivity to 10% increase and decrease in the sterling exchange rate against US Dollar on its profits and equity. (CRH 's financial report, p 88)*

|  | Swedish kronor<br>currency impact |               | US dollar<br>currency impact |               | Euro<br>currency impact |               |
|--|-----------------------------------|---------------|------------------------------|---------------|-------------------------|---------------|
|  | 2011<br>£'000                     | 2010<br>£'000 | 2011<br>£'000                | 2010<br>£'000 | 2011<br>£'000           | 2010<br>£'000 |
| Effect of a 10% increase in relevant exchange rate on: |                                   |               |                              |               |                         |               |
| Profit or loss   | (2)                               | (669)         | (132)                        | (281)         | (478)                   | (201)         |
| Other equity   | (1,111)                           | (519)         | 35                           | 25            | —                       | —             |
| Effect of a 10% decrease in relevant exchange rate on: |                                   |               |                              |               |                         |               |
| Profit or loss   | 3                                 | 818           | 162                          | 344           | 584                     | 245           |
| Other equity   | 1,357                             | 602           | (42)                         | (31)          | —                       | —             |

*Figure 9 . Xaar 's currency sensitivity (Xaar's financial report 2011, p. 60)*

|   | Equity and Profit/(Loss) |              |
|---|--------------------------|--------------|
|   | 2011<br>£000             | 2010<br>£000 |
| <b>10% strengthening of Sterling against:</b> |                          |              |
| US Dollar                                     | 73                       | 117          |
| Australian Dollar                             | 63                       | 166          |
| <b>10% weakening of Sterling against:</b>     |                          |              |
| US Dollar                                     | (90)                     | (144)        |
| Australian Dollar                             | (72)                     | (203)        |

*Figure 10 . VP plc's currency sensitivity ( VP plc 's financial report 2011, p.51 )*

In term of counterparty risk or credit risk, the company's governed policy is to reduce the default in payment from any single counterparty by spreading its risk across a portfolio of financial counterparties. The aggregate amount and duration is restricted and varies in different contracts with reference to external credit ratings and balance sheet strength of the individual counterparty. (Compass group's financial report, p 56 & Yell Group plc's financial report, p 21). As stressed in section 2.3, all of the derivative users confront with default risk or credit risk and that's why the hedging policy has to concentrate on mitigating such an exposure.

In addition, as mentioned earlier in section 4.3 , the derivative financial instruments are held or issued not for trading or speculative purposes but are aimed at matching as accurately as possible companies' principal projected cash flows by currency and with the comparable maturity profile to actual liabilities , assets or transactions in the same currency. As a result, seeking for perfect match becomes the essential requirement for hedging decision. This requirement is consistent with the objective of ensuring contractual commitment mentioned in section 2.2.2

Another important determinant on hedging decision comes from the certainty of company's commitment on executing potential transaction. The more probably the transaction occurs, the more likely the hedging instruments are exercised. (Sprient's financial report & Yell's financial report, p 73).This determinant is also consistent with the first and foremost objective of corporate hedging discussed in section 2.2.2

As noticed, there is a remarkable difference between the above-mentioned theory and empirical results .Compared with theory stating that the underlying factors behind hedging decisions are policy, firm size, leverage, liquidity , profitability and cost of hedging,the empirical outcomes only confirm the significance of company's hedging policy and show that the large firms are more likely to engage into derivatives contracts compared to medium firms. However, the results have no disclosure or mention about other factors. According to the collected data,when it comes to derivatives practice, there seems no significant difference from one firm to another firm. For instance: When it comes to highly forecasted transactions ( purchase or sale) or translation from foreign subsidiaries' functional currency into mother company's accounting currency , forward

is preferred. When it comes to bond or note issuance, swap is favorable. However, the leverage, liquidity and profitability level vary substantially with firms. It can be concluded that these factors (leverage, profitability and liquidity) are just “supplementary” or “marginal” factors, they, in practice, do not serve as the primary elements based on which the companies set the hedging policy.

## **5 CONCLUSION**

As the matter of fact that world increasingly becomes global village, the growing number of firms is eager to conduct their business in international market place in order to maximize their profit. Due to its significant impact on financial result, currency risk has recently raised huge concerns from companies around the world. Employing financial derivative instruments to hedge against currency risk is an interesting topic and has sparked a lot of controversy among financial managers.

There are four main themes explored by the author to approach this topic. At the initial stage, the author targeted at finding out whether currency risk and its potential adverse impact are recognized and assessed by multinational companies. Secondly, the question on whether financial derivative instruments can be employed to minimize the risk was addressed. Then, what type of derivative instruments is designated as an effective hedging tool against exchange rate exposure is answered. Lastly, determinants behind the selection of hedging mechanism are figured out.

The empirical research is carried out on the foundation of a qualitative method. Although, the research relies mainly on secondary data, it still provides thorough and accurate answers to all research questions.

The findings reveals that two type of currency risk (transaction and translation exposures) are fully identified and evaluated in all selected companies, unfortunately a high proportion of companies had no mention about economic exposure in their consolidated financial statements. In addition, although other hedging techniques such as netting, borrowings or natural hedge are at times employed, financial derivative instruments are considered to play a primary role in hedging currency risk in British

companies . It might be that due to the accounting standard, the companies listed on London stock exchange are required to identify and deal with the currency risk in the same way. As a result, there seems no big difference in derivative using behaviors from different companies. The main objective of using derivatives is to ensure the contractual commitment and to avoid the adverse currency movement. Forwards is designated as the most common type of derivatives and swap is ranked as the second favorable tool because matching the contract with potential commercial transaction as accurately as possible is prerequisite and because hedging instrument is not held for trading or speculative purposes according to the companies' rules .The proved merits of negotiable terms and legal obligation make forwards far outweigh the other types of derivatives. When it comes to issuance of foreign currency denominated notes, bond or stock, swaps is seen as a great choice because bond is long-term investment and the issuance requires interest payment at regular interval and principal payment at maturity date. With larger asset invested in foreign subsidiaries, massive amount of capital and a higher number of overseas lucrative project, large-sized firms are more likely to be exposed to translation exposure and they also have more likelihood of conducting swap contracts than medium sized firms .Furthermore, due to the closing-out opportunity and standardized features, just a small number of firms are willing to take out options .The margin account adds to futures' weaknesses and make the contracts less favorable than options. Last but not least, the determinant behind currency hedging decision as well as hedging mechanism selection is company's policy, which is set on the foundation of size of transaction, counterparty risk, the possibility of finding the perfect match and the likelihood of future commercial transaction. Different from theory, the factors (leverage, profitability ,liquidity levels) are, in practice just marginal factors and are not placed much emphasis when the hedging policy is set.

## **5.1 Relevance of the thesis to firms**

As a growing number of firms strive to extend business and, as a result, to engage in overseas operating activities, they are more likely to be subject to exchange rate exposure. Derivative financial instruments are evaluated to be an effective tool to minimize the risk and used at a high frequency in many companies ,but somehow might be

unpopular to some companies, in particular ones which have not gained any experience of doing business across the border. This research will assist such a sort of companies, specifically British firms, in gaining better understanding about currency risk and in selecting a suitable instrument to mitigate the currency volatility.

## **6 SUGGESTIONS FOR FURTHER RESEARCH**

Due to the limited scope of this research, the author carried out the study to explore about derivative financial instruments to minimize the volatility of currency merely among British large and medium-sized companies. For the British small-sized companies or newly established companies which normally lack of proficiency in conducting worldwide business, their commercial objectives might be totally different and ,hence, hedging strategies might bring a big surprise to other researchers. In addition, this paper might be able to draw merely the general pattern of derivative usage in some certain sizes of companies in United Kingdom .As mentioned earlier, the main driving force behind the decision of currency hedging and the choice of particular instrument is company's policy. This primary determinant, however, might vary from country to country due to the difference in corporate culture and economic consideration. Therefore, other researchers might desire to delve deeper into the comparison of derivatives usage to hedge against currency between United State based companies and companies which are headquartered in European Union countries. Hence, in such a further study, the result of this paper can be taken as a reference to expand the scope.

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## APPENDICES

### Appendix 1 : Summary of derivative usage to hedge against currency risk in British large –sized firms

|    | Companies            | Types of currency exposure hedged | Specific purpose  | Type of derivative financial instrument | Currencies  |
|----|----------------------|-----------------------------------|---|---|---|
| 1  | <b>AMEC</b>          | Transaction                       | Purchase and sale Oversea subsidiaries                    | Forward Currency interest rate swap     | Canadian, US dollar                               |
| 2  | <b>ARM HLDGS</b>     | Transaction                       | Sale  | Forward Option                          | US dollar   |
| 3  | <b>Ashmore</b>       | Transaction                       | Sale  | Forward Option                          | US dollar, Brazilian Real                         |
| 4  | <b>Aviva</b>         | Transaction Translation           | Sale, oversea subsidiaries                                | Forward Currency swap                   |   |
| 5  | <b>BT Group plc</b>  | Transaction                       | Purchase and borrowings                                   | Forward Currency swap                   | US Dollar, Euro, Asia Pacific region currencies   |
| 6  | <b>Burberry</b>      | Transaction                       | Royalty income, sale Purchase                             | Forward Currency swap                   | US Dollar, Euro                                   |
| 7  | <b>Capital PLC</b>   | Transaction                       | Oversea operation in India, Dollar-issued bonds           | Forward, Swap                           | Indian INR, US dollar                             |
| 8  | <b>Centrica</b>      | Transaction Translation           | Purchase, sale Net investment in North America and Europe | Forward, Currency interest rate swap    | Canadian dollar, US dollar, Norwegian Krone, Euro |
| 9  | <b>Compass Group</b> | Transaction Translation           | Purchase, sale, oversea subsidiaries                      | Forward, Cross currency swap            | US dollar, Japanese Yen, Euro                     |
| 10 | <b>CRH</b>           | Transaction                       | Purchase, sale  | Forward , Cross                         | US dollar   |

|    |  |                             |  |  |                                     |
|----|--|-----------------------------|--|--|-------------------------------------|
|    |  |                             |  | currency swap                                  |                                     |
| 11 | <b>Diageo</b>                          | Transaction<br>Translation  | Purchase, sale,<br>Oversea<br>subsidiaries                             | Forward,<br>Cross<br>currency swap             | US dollar,<br>Euro                  |
| 12 | <b>Experian plc</b>                    | Transaction                 | Purchase, sale,<br>us and euro<br>issued bond                          | Forward, cross<br>currency swap                | Us dollar, euro                     |
| 13 | <b>G4S</b>                             |                             |  | NO   |                                     |
| 14 | <b>GSK</b>                             | Transaction                 | Net<br>investment,<br>future<br>repayment,<br>borrowings               | Forwards,<br>currency<br>interest rate<br>swap | Us dollar, euro                     |
| 15 | <b>Hammerson</b>                       | Transaction                 | Net<br>investment in<br>subsidiaries,<br>borrowings                    | Swap   | Euro                                |
| 16 | <b>IMI PLC</b>                         | Translation,<br>transaction | Limited<br>protection on<br>an opportunity<br>basis, Net<br>investment | Short term<br>currency<br>option,<br>Forwards  | US dollar,<br>Euro                  |
| 17 | <b>Mark &amp;<br/>Spencer</b>          | Translation                 | Oversea<br>subsidiaries,<br>Borrowings                                 | Forward<br>exchange<br>contract                | Euro and other<br>currencies        |
| 18 | <b>Meggitt PLC</b>                     | Transaction,<br>Translation | Oversea<br>subsidiaries,<br>Borrowings                                 | Forward<br>exchange<br>contract                | Euro and US<br>dollar               |
| 19 | <b>Segro</b>                           | Translation                 | Hedge foreign<br>currency<br>denominated<br>asset                      | Forwards,<br>Currency<br>swap                  | US dollar and<br>Euro               |
| 20 | <b>Morgan Crucible</b>                 | Transaction                 | Sale and<br>purchase, Net<br>investments                               | Forward<br>exchange<br>contract                | US dollar and<br>Euro               |
| 21 | <b>Mitchells &amp;<br/>Butlers plc</b> | Transaction                 | US\$ principal<br>and initial<br>interest<br>elements of<br>notes      | Cross<br>currency swap                         | US dollar                           |
| 22 | <b>Ophir Energy<br/>plc</b>            |                             |  | NO   |                                     |
| 23 | <b>Oxford<br/>Instruments<br/>plc</b>  | Transaction                 | Sale and<br>purchase   | Forwards,<br>Non-premium<br>based option       | US dollar,<br>Euro, Japanese<br>Yen |
| 24 | <b>Northgate plc</b>                   | Translation                 | Translate asset<br>and liabilities<br>of its Spanish                   | Cross<br>currency swap                         | Euro, US<br>dollar                  |



|    |                      |  |           |    |  |
|----|----------------------|--|-----------|----|--|
|    |                      |  | and Irish |    |  |
| 25 | <b>Stobart group</b> |  |           | NO |  |

**Appendix 2: Summary of derivative usage to hedge against currency risk in British large –sized firms**

|    | <b>Companies</b>                 | <b>Types of currency exposure hedged</b> | <b>Specific purpose</b> | <b>Type of derivative financial instrument</b> | <b>Currencies</b>   |
|----|----------------------------------|--|-------------------------|--|---|
| 1  | <b>Colt Telecom Group plc</b>    | Transaction economic                     | Purchase                | Forwards                                       | US dollar   |
| 2  | <b>Camellia</b>                  |  |                         | NO   |   |
| 3  | <b>Chesnara</b>                  | Transaction                              | Purchase                | Forwards                                       | Swedish Krona   |
| 4  | <b>Costain</b>                   | Transaction                              | PFI investment          | Forwards                                       | US dollar, Euro   |
| 5  | <b>Dialight</b>                  | Transaction                              | Sale and purchase       | Forwards                                       | US dollar<br>Euro   |
| 6  | <b>Findel Plc</b>                | Transaction                              | Purchase                | Forwards                                       | US dollar and Hong Kong dollars                                     |
| 7  | <b>Mothercare plc</b>            | Transaction                              | Sale and purchase       | Forwards                                       | US dollar, Hong Kong dollar   |
| 8  | <b>Sepura plc</b>                | Transaction                              | Sale                    | Forwards                                       | Euro  |
| 9  | <b>Primary health properties</b> | Transaction                              | Sale and purchase       | Forwards<br>Currency option                    | euros, US dollars, Swedish Kronor<br>Canadian dollars, Swiss francs |
| 10 | <b>Pvcrystalox</b>               | Transaction<br>Translation               | Sale and purchase       | Forwards                                       | Euros and Japanese  |

|    |                          |                         |  |   |                                      |
|----|--------------------------|-------------------------|--|---|--------------------------------------|
|    |                          |                         |  |   | Yen                                  |
| 11 | <b>Renold</b>            | Transaction Translation | Sale and purchase Subsidiaries                             | Forwards  | Euro and US dollar                   |
| 12 | <b>RM plc</b>            | Transaction             | Sale and purchase  | Forwards  | US dollar, India Rupee               |
| 13 | <b>Ricardo</b>           | Transaction             | Net investment in German's Subsidiaries                    | Forward currency contract<br>Currency interest rate Swap          | Euro, US dollar                      |
| 14 | <b>Severfield-Rowen</b>  | Transaction             | Sale and purchase  | Forwards  | US dollar, Euro                      |
| 15 | <b>Smiths News plc</b>   |                         |  | NO  |                                      |
| 16 | <b>Speedyhire</b>        |                         |  | NO  |                                      |
| 17 | <b>Sepura plc</b>        | Transaction             | Revenue, purchase  | Forwards  | Euro                                 |
| 18 | <b>Ted baker</b>         | Transaction economic    | Sale and purchase  | Forwards  | Euro, US dollar                      |
| 19 | <b>Thomas Cook Group</b> | Transaction Translation | Purchase, sale, US dollar external borrowings subsidiaries | Forwards<br>Cross currency interest rate swap,<br>Currency option | US dollar, Euro                      |
| 20 | <b>Torotrak</b>          |                         |  | NO  |                                      |
| 21 | <b>VP Plc</b>            | Transaction translation | Purchase, sale Subsidiaries                                | Forwards<br>Currency swap   | Us dollar<br>Australia dollar        |
| 22 | <b>Vectura group</b>     |                         |  | NO  |                                      |
| 23 | <b>Yell Group</b>        | Transaction             |  | Forwards  | US dollar, Euro                      |
| 24 | <b>Wincanton</b>         | Translation             | Investment in overseas subsidiaries                        | Forwards, swaps   | US dollar, Euro, Hungarian           |
| 25 | <b>Xaar</b>              | Transaction             | Operation cost, revenue                                    | Forwards  | Swedish kronor, US dollars and euros |